

What I claim is:**1. An electrically enhanced filtering apparatus, comprising:**

5 a layer of porous filter medium folded into one or more arms to fit transversely across a passageway extending between upstream and downstream ports of the apparatus, with successive pairs of said arms alternately joined together to form a terminus and spaced-apart to form a pocket providing a base open to passage of effluent between the upstream and downstream ports;

10 a first electrically conducting grid disposed at a local reference potential across a first major exterior of said medium to cover said downstream side of each of said arms;

15 an electrode separated from an upstream side of said medium, with said electrode spaced-apart from opposite corresponding ones of said arms while extending through said pocket;

20 a second electrically conducting grid electrically separated from said first grid by said medium, disposed across a second major exterior of said medium in conformance to each of said arms on an upstream side of said medium; and

25 an electrically conducting screen disposed upstream of said electrode at said local reference potential and positioned to extend across the upstream port of said apparatus and establish a first potential difference relative to said electrode, while a second potential difference occurs between said electrode and said second grid, and a third potential difference occurs between said second grid and said first grid.

2. The apparatus of claim 1, comprised of said electrode forming an array comprising a plurality of spaced-apart lengths, with at least one of each said lengths positioned within a different said pocket.

3. The apparatus of claim 1, comprised of:

25 said layer of filter material being repetitively lapped into a plurality of pleats along each of said arms, with crests of said pleats forming said upstream surface and said downstream surface; and

30 said second grid providing a mating conformance to each of said arms by extending across said crests along said upstream surface.

4. The apparatus of claim 4, comprised of:

5 said layer extending along each of said arms in a linear continuum lying between said first grid and said second grid.

5 5. The apparatus of claim 1, comprised of:

 said layer extending along each of said arms in a linear continuum lying between said first grid and said second grid; and

 an electrical insulator maintaining at least one of said first grid and said second grid physically spaced-apart from said medium.

10 6. The apparatus of claim 1, comprised of an electrical insulator maintaining at least one of said first grid and said second grid spaced apart from said upstream surface.

15 7. The apparatus of claim 1, further comprising at least one of said first grid and said second grid being made of a material selected from a group comprised of carbon, carbon fibers, fibers coated with carbon, and combinations of at least two of carbon, carbon fibers, and fibers coated with carbon, printed upon at least one of said first major exterior and said second major exterior of said medium.

20 8. The apparatus of claim 2, further comprising at least one of said first grid and said second grid being made of a material selected from a group comprised of carbon, carbon fibers, fibers coated with carbon, and combinations of at least two of carbon, carbon fibers, and fibers coated with carbon, printed upon at least one of said first major exterior and said second major exterior of said medium.

25 9. The apparatus of claim 4, further comprising at least one of said first grid and said second grid being made of a material selected from a group comprised of carbon, carbon fibers, fibers coated with carbon, and combinations of at least two of carbon, carbon fibers, and fibers coated with carbon, printed upon at least one of said first major exterior and said second major exterior of said medium.

10. The apparatus of claim 1, comprising an electrical resistance operationally

connecting said second grid to said local reference potential.

11. A filter for an electrically enhanced filtering apparatus, comprising:

a layer of a porous filter medium folded into one or more arms forming a pocket with a terminus of said pocket located on a downstream side of said medium and with a base of said pocket open to an upstream side of said apparatus;

5 a first electrically conducting, perforated grid disposed on an exterior of said medium to cover said downstream side of each of said arms; and

10 a second electrically conducting, perforated grid electrically separated from said first grid by at least said medium, disposed in geometric conformity to the exterior of each of said arms on an upstream side of said medium.

12. The apparatus of claim 11, comprised of said base exhibiting a linear dimension greater than said thickness.

13. The apparatus of claim 11, comprised of a distance between said base and said terminus being greater than or equal to a linear dimension exhibited by said base.

15 14. The apparatus of claim 11, comprised of a distance between said base and said terminus being not less than a linear dimension exhibited by said base, and said linear dimension being greater than a thickness exhibited by said medium.

15. The apparatus of claim 11, further comprised of:

an air inlet; and

20 an electrode spaced-apart from said second grid, positioned between said arms to extend across said air inlet.

16. The apparatus of claim 11, with said layer further comprised of:

said layer disposed in a plurality of pleats within each of said arms, with said pleats undulating between said first grid and said second grid.

25 17. The apparatus of claim 11, comprised of said layer extending along each of said

arms in an elongate linear continuum lying between said first grid and said second grid.

18. The apparatus of claim 11, further comprised of:

5 said layer extending along each of said arms in a linear continuum lying between said first grid and said second grid; and

an electrical insulator maintaining one of said first grid or said second grid physically spaced-apart from said medium.

10 19. The apparatus of claim 11, further comprising at least one of said first grid and said second grid being made of a material selected from a group comprised of carbon, carbon fibers, fibers coated with carbon, and combinations of at least two of carbon, carbon fibers, and fibers coated with carbon, printed upon at least one of said first major exterior and said second major exterior of said medium.

20. The apparatus of claim 11, comprised of said second grid comprising a material porous to passage of gaseous fluid through said apparatus but partially impervious to particles borne by the gaseous fluid.